A Challenging Case of Crackles: Heart Failure after Pre B Acute Lymphoblastic Leukemia Treatment

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Background

- Greater than 15,000 cancers are diagnosed in patients younger than 19 years old resulting in approximately 450,000 survivors of pediatric cancer.\(^1\)
- ALL (Acute Lymphoblastic leukemia) is the most common cancer diagnosed in children and represents 25% of cancer diagnoses younger than 15 years.\(^2\)
  - Approximately 98% achieve remission
  - 85% of patients are expected to be long term event free survivors with over 90% surviving at 5 years.\(^2\)
- Cardiovascular disease is the leading cause of non-cancer morbidity in cancer survivors.\(^3\)
- Post- Heart transplant survival outcomes has been shown to be similar in children with & without pre-transplant malignancy.\(^4\)

Case Presentation

- The patient is a 4 year old male with a history of infant pre B, CNS negative ALL diagnosed at age 10 months on 6/9/15
- Treatment Regimen: Chemotherapy AALL0631
- Cumulative Anthracycline Dose: 145 mg/m\(^2\)
- Patient achieved remission with induction.
- One month after therapy completion on 7/27/17, he presented with orbital disease and CSF positive for extramedullary relapse of ALL
- Treatment Regimen: AALL1331
- Received 1800 cGy Cranial radiation therapy
- Achieved remission with 4 weeks of retrieval maintenance chemotherapy until 7/5/19:
  - vincristine, methotrexate, mercaptopurine, solumedrol

Clinical Course

Timeline of Cardiac Events

1/30/19: Crackles, URI symptoms & fevers
- Rhino positive
2/15/19: Persistent crackles with cardiomegaly
- Initial ECHO showed Pericardial effusion,
- Moderately depressed biventricular function (fig 1)
- Lab work: Troponin leak of 2.06 ng/ml & CRP 23 mg/dl
- ECG with ST elevation and NSVT
2/18/19: Cardiac Catheterization
- LPCW 14 mm HG, CI 3.5, PVR 1.7
- Normal coronary anatomy
- Endomyocardial Biopsy with myocardial necrosis & granulation tissue (fig 2)
2/19/19 Cardiac MRI
- with extensive delayed enhancement inferior septum, inferior RV and LV & depressed function (fig 3)
3/1/19: Complete heart block
- Epicardial dual chamber ICD placed
3/30/19: Discharged to home on oral heart failure regimen
4/6/19: Readmitted with heart failure symptoms & NSVT
- improvement with milrinone gtt & amiodarone gtt
4/30/19: After considerable discussion, patient Listed for Heart Transplant status 1A by exception
7/6/19: Crackles persisted
- 2 subsequent Chest CTs revealed ground glass opacities concerning for Interstitial Lung Disease (ILD)
- Negative Infectious & rheumatologic evaluation
- Made status 7
11/6/19: Lung biopsy revealed peribronchial cells & no ILD (fig 4)

Discussion

- Lung BAL showed Penicillium & Parainfluenza
1/7/2020 With reassuring lung biopsy, patient was reactivated on the heart transplant waiting list as status 1B

References

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I have nothing to disclose